

## Low cost *Mitsubishi* servo motors

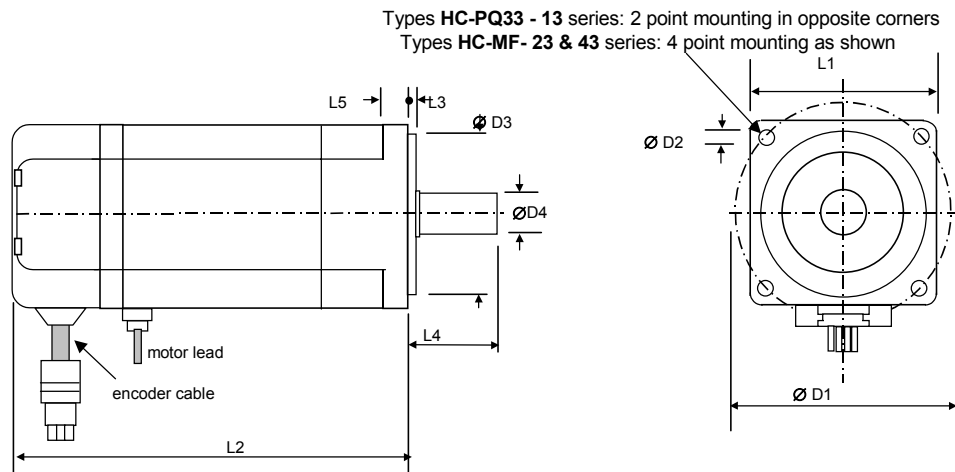
## HC -PQ series

The HC-PQ series of Brushless servo motors have been developed specifically for use with the compact Mitsubishi *MEL MR-C* packaged brushless drive and offer the following key features:

- Compact size down to 40 mm square
- Ultra low inertia provides fast response with rapid acceleration and mechanical time constants down to 2 msec.
- Maintenance-free 3 phase brushless construction
- Peak torque ratings up to 2.99 Nm
- Optional low backlash planetary geared versions with peak torque ratings up to 250 Nm
- Encoder commutation facilitates Sinewave drive technology to provide smooth operation and high resolution of 4,000 counts/rev.



### Mitsi HC-PQ series servo motor dimensions:



### Table of Dimensions: mm.

Motor Options:		HC-PQ033	HC-PQ053	HC-PQ13	HC-PQ23	HC-PQ43
Frame Size ( square )	L1		40		60	
Body Length	L2	65.5	71.5	86.5	89	114
Centring Spigot Length	L3		2.5		3	
Shaft length	L4		25		30	
Typical Flange thickness	L5		5		7	
Diametric measurements						
Mounting hole PCD	D1		46		70	
Mounting hole diameter	D2		2 x 4.5		4 x 5.8	
Spigot Diameter	D3		30 h7		50 h7	
Shaft Diameter	D4		8 h6		14 h6	

Add 'EC' to Part Number for compliance to European Directives

### Specification & performance using *MEL-Servo MR-C* brushless drivers

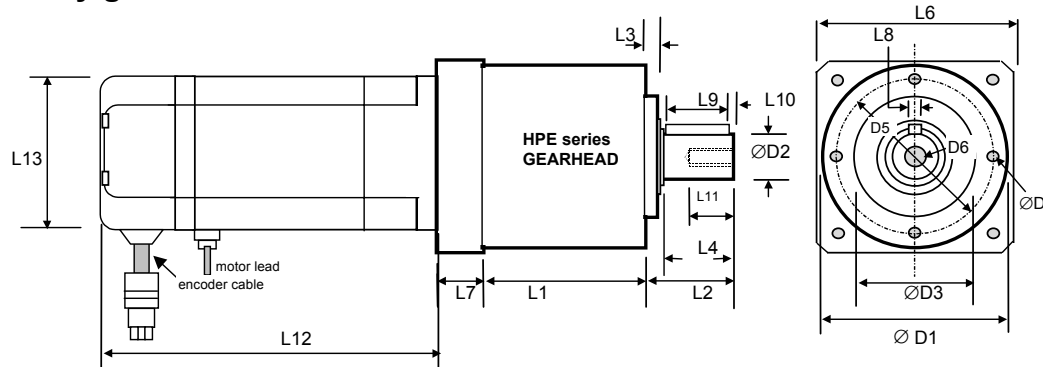
Motor Options:		HC-PQ033	HC-PQ-053	HC-PQ13	HC-PQ23	HC-PQ43
Matched <i>MEL</i> Drive		-C10A	-C10A	-C10A	-C20A	-C40A
Rated Torque	Nm	0.095	0.16	0.32	0.64	1.3
Peak Torque	Nm	0.38	0.64	1.28	1.92	2.99
Output Power	kW	0.03	0.05	0.1	0.2	0.4
Rotor Inertia	Kgcm <sup>2</sup>	0.014	0.019	0.03	0.088	0.143
Mass	kg	0.32	0.37	0.50	0.96	1.45
Maximum Continuous Speed		4,500 rpm				
Rated Speed		3,000 rpm				
Integral encoder		dual track, resolution: 4,000 counts / rev				
Enclosure		totally enclosed, self cooling				
Ambient temperature range		0 to + 40 deg. C				

# Planetary geared brushless servo motors

# HPE/HC series

- High peak torque provides high acceleration & deceleration capability
- Capable of withstanding factor 2 emergency shock loads without damage
- Low backlash construction provides accurate positioning and long life
- High torsional rigidity for stable operation in high speed positioning.
- Low torque ripple for smooth operation in velocity servo applications
- Planetary construction for high torque to volume ratio
- High reliability and serviceability

## Planetary geared servo motor dimensions:



## Table of Dimensions: mm

Gearhead		HPE50		HPE70		HPE90	
Motor Types		HC-PQ13	HC-PQ053	HC-PQ43	HC-PQ23	HC-PQ43	
Gearbox Version		HPE50S	HPE50D	HPE70S	HPE70D	HPE90D	
<b>Gearbox Diameter</b>	D1	<b>50</b>	<b>50</b>	<b>70</b>	<b>70</b>	<b>90</b>	
Output shaft diameter	D2	12 k6	12 k6	16 k6	16 k6	22 k6	
Gearbox mounting register	D3	35 h6	35 h6	52 h6	52 h6	68 h6	
Gearbox mounting holes	D4	4 x M48 deep		4 x M5 10 deep		4 x M8 12 deep	
mounting hole PCD	D5	44	44	62	62	80	
Shaft fixing bolt diameter	D6	tapped	M4	tapped	M5	M8	
<b>Gearbox Length</b>	L1	53	74.5	69	91.5	109	
Overall Output Shaft length	L2	24.5	24.5	36	36	46	
Gearbox register length	L3	4	4	5	5	5	
Free shaft length	L4	18	18	28	28	36	
<b>Gearhead flange size</b>	L6	<b>50</b>	<b>50</b>	<b>70</b>	<b>70</b>	<b>90</b>	
Adaptor length	L7	19	19	22	22	32	
Output shaft key width	L8	4 h9	4 h9	5 h9	5 h9	6 h9	
Output shaft Key length	L9	14	14	25	25	32	
Key distance to shaft end	L10	2	2	2	2	2	
Shaft fixing tapped length	L11	8	8	10	10	13	
<b>Motor body length</b>	L12	See motor data					
<b>Motor body square</b>	L13	40	40	60	60	60	

## Performance of geared servo motors

Gearbox Model	Gear Ratio n:1	Motor Model	Rated Speed (rpm)	Rated Torque (Nm)	Peak Torque (Nm)	Maximum Emergency Torque (Nm)	Max. Backlash (arc. min.)	Assembly Mass (Kg)
HPE 50S	5	HC-PQ13	600	1.5	4.5	4.5	≤ 12	1.3
	10		300	3.0	9.1	9.1		
HPE 50D	25	HC-PQ13	120	5.7	11.5	22	≤ 15	1.5
	50	HC-PQ053	60	5.7	11.5	22		1.4
	100		30	5.2	10.5	26		1.4
HPE 70S	5	HC-PQ43	600	6.1	18	18	≤ 12	3.4
	10		300	12.4	29	36		
HPE 70D	25	HC-PQ23	120	15	32	44	≤ 15	3.2
	50		60	16	32	75		
	100		30	15	29	75		
HPE 90D	25	HC-PQ43	120	21	80	170	≤ 15	8.1
	50		60	40	80	170		6.6

For ultra low backlash specify Omagear HP series gearheads.

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